

Quiz 6

1. (2 points) Find the last digit of 7^{100} .

2. (4 points) What is the remainder when the sum

$$1^5 + 2^5 + 3^5 + \dots + 99^5 + 100^5$$

is divided by 4?

(Hint: any integer can be represented as $4k + r$ where $k, r \in \mathbb{Z}$ and $r \in \{0, 1, 2, 3\}$.)

3. (4 points) Show that $2^{p-2} + 3^{p-2} + 6^{p-2}$ is congruent to 1 mod p for any prime $p > 3$.